Program Area 1: Energy Efficiency

I. Introduction and Background

Technological advances in all types of energy-using equipment, from motors to boilers to lights, enable the equipment to perform while using less energy. One stellar example of this is the compact fluorescent lightbulb which can deliver the same amount of light as the conventional incandescent bulb while using 75% less energy, and it lasts 10 times longer so easily pays for itself in the first year of its lifetime then keeps on saving for the remaining years.

Buildings represent the main energy-user in state government so the recommendations below are directed toward new and existing buildings as well as grounds.

II. Environmental and Economic Benefits

Reducing energy use provides many economic, environmental and other benefits.

Cost savings of 25 percent can often be achieved by implementing cost-effective equipment replacements and operational strategies. This goes right to the bottom-line of state department utility budgets and enables the state to re-direct funds that otherwise are paid to utility companies. Reducing energy costs also mitigates the future impact of volatile energy prices and fuel price escalation. The state uses $38 million in energy per year (2004-05 figures for state departments), so a 25% reduction will save $9.5 million per year in funds that can be freed-up to meet other budget needs. In fact, the savings can be used to pay for the projects through an innovative approach called performance contracting, where annual savings are guaranteed to meet the finance payments within the lifetime of the equipment. The State has already taken significant steps in this direction, particularly under Executive Order D 014 03, Energy Performance Contracting to Improve State Facilities, which requires state departments to initiate performance contracts as feasible.

There are many opportunities for increased efficiency in new buildings, where a 30% reduction in energy costs can result from better design without expanding the design/construction budget.

Reducing energy use also goes to the environmental bottom line, reducing the demand on our natural resources for fuel supplies. These energy savings improve air quality by reducing air emissions from electrical power plants and on-site fuel combustion. A 25% reduction in energy use is the pollution-prevention equivalent of taking 11,000 cars off the road each year.

Economic benefits also result. Besides cutting utility costs, implementing energy-saving projects is a boon to the Colorado economy. For each $1 in performance contracting projects, $0.40 is pumped into the local economy according to the National Association of Energy Service Companies, 2003. Also, several studies suggest that four to five jobs are created for every $1 million in energy investment.

The quality of energy efficient equipment and the effective operation results in improved comfort in the buildings for occupants – better lighting, better temperature control, adequate fresh air, reduced noise from equipment operation, etc. Studies show this improves worker productivity and attendance.

III. Existing Energy Efficiency Efforts

- The Department of Corrections through its Energy Management Program avoids $1.8 million in annual costs (10 percent of its utility budget) and is planning additional facility improvements that could result in avoided annual costs exceeding $1 million.
- The Department of Human Services through its aggressive program to manage its $5.3 million annual utility budget achieved a 10 percent level of cost avoidance.
- The Department of Human Services is also in the construction phase of a performance contract that will avoid an additional $1,000,000 in annual utility costs.
- The Department of Personnel and Administration, with the Judicial Department and the Department of Labor & Employment, is using performance contracting for a large-scale, comprehensive project that captures $700,000 in annual reductions to pay for $14 million in facility upgrades.
- The Department of Military Affairs is demonstrating how re-commissioning (technical building tune-up) can improve the efficiency of four of its facilities.

IV. Energy Efficiency Statewide Strategies

- The Energy Efficiency Subcommittee should provide information resources to agencies to help the identify, assess, and implement energy conservation opportunities – such resources/tools include:
  - -Websites
  - -Guides and fact sheets
  - -Technical support from OEMC.

V. Energy Efficiency Strategies

To help reach energy efficiency goals, agencies should:

- Contact OEMC to get technical assistance in identifying and implementing cost-effective approaches, and utilizing innovative financing approaches with available utility rebates to pay for the projects.
- Use performance contracting to initiate and implement large-scale, comprehensive energy-saving projects in all your facilities.
- Adopt the United States Green Buildings Council's Leadership in Energy and Environmental Design Green Building Rating System for Existing Buildings (LEED-EB) in operating, maintaining and managing existing buildings, to the extent applicable and practicable.
- Incorporate LEED for New Construction (LEED-NC) practices to design energy and resource efficient new buildings, to the extent that this is deemed cost-effective.
- Require commissioning to ensure new construction projects function as designed.
- Initiate an energy management program to monitor and manage utility usage and costs, as resources become available. The first step is to collect gas and electricity data. OEMC intends to launch a program to aid departments in this effort in Fall 2006.

Action steps for energy efficiency opportunities

- Turn off lights in offices, conference rooms, kitchens, etc., install motion detectors in rooms that are not used regularly.

- Replace inefficient incandescent lights with more efficient alternatives, such as
    - LED exit signs: Replacing one incandescent sign can save 20-30 watts.
    - Compact fluorescent lamps (CFL): Replacing a 100-watt incandescent lamp with a 27-watt CFL saves over $60 over the life of the bulb.

- Install vending misers on soda machines: Installing a motion sensing vending miser will save over 40% in energy cost, de-lamping the soda machine can save an additional 20% for a total of 60% savings without losing any performance on the machine.

- Use your sleep setting on your computer. Set your monitor to go to sleep if it is not being used for over 20 minutes, monitors typically use over half the energy in your computer system.

- Consider replacing your old CRT monitor with a new LCD monitor. LCD's use about a quarter the energy, have much less toxic material in them, and last longer than a CRT.

- Operate equipment only when needed: Perform night and weekend audits to discover what equipment is operating that could be turned off (e.g., bathroom lights, desk lights, fans, printers, copiers, etc.).